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F4R RMG R336 R389 R417 R43Y
U1S S1935

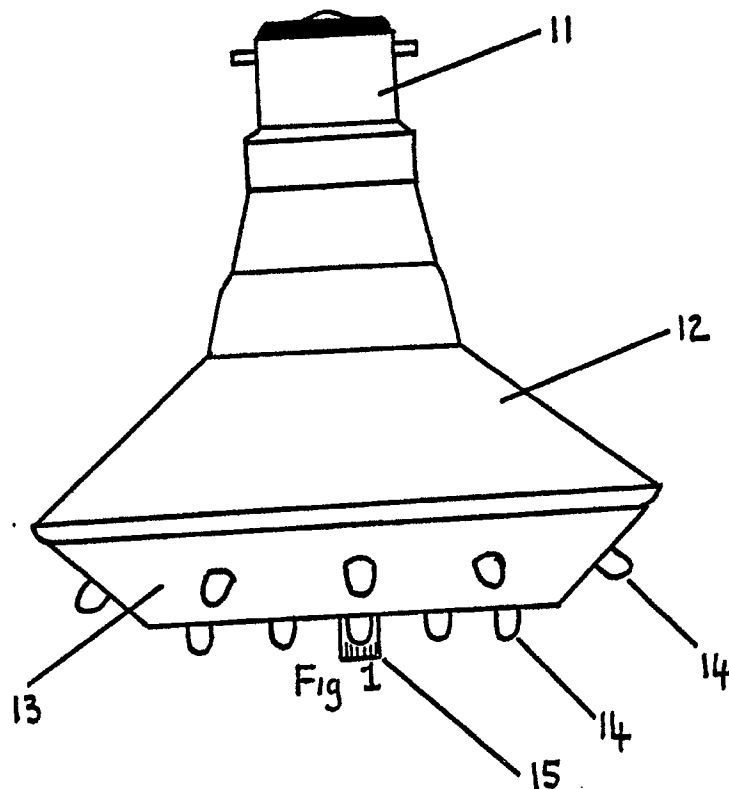
(56) Documents cited
None

(58) Field of search
UK CL (Edition K) F4R RE RFC RFG RMG
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(54) **Solid state display light**

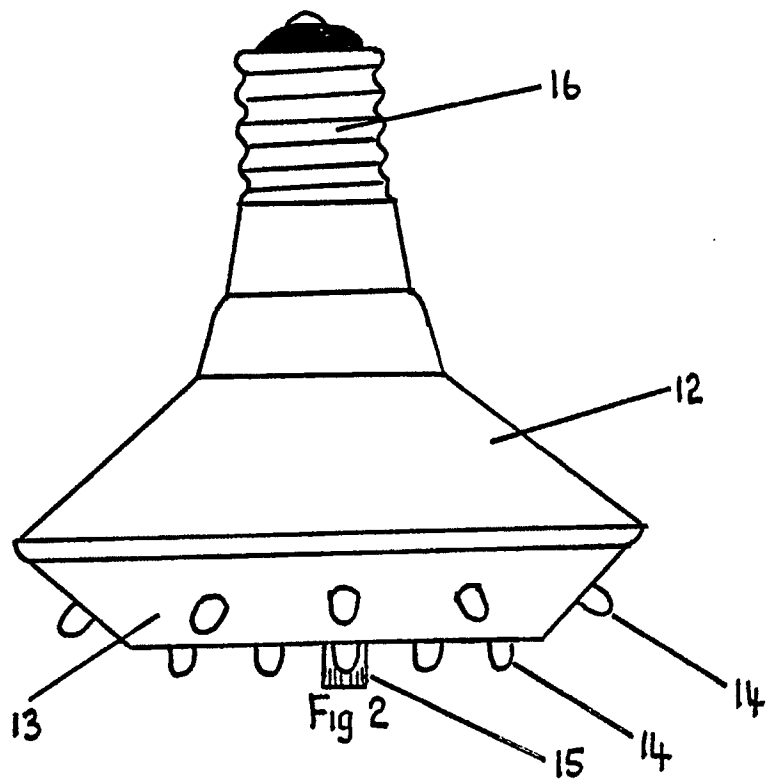
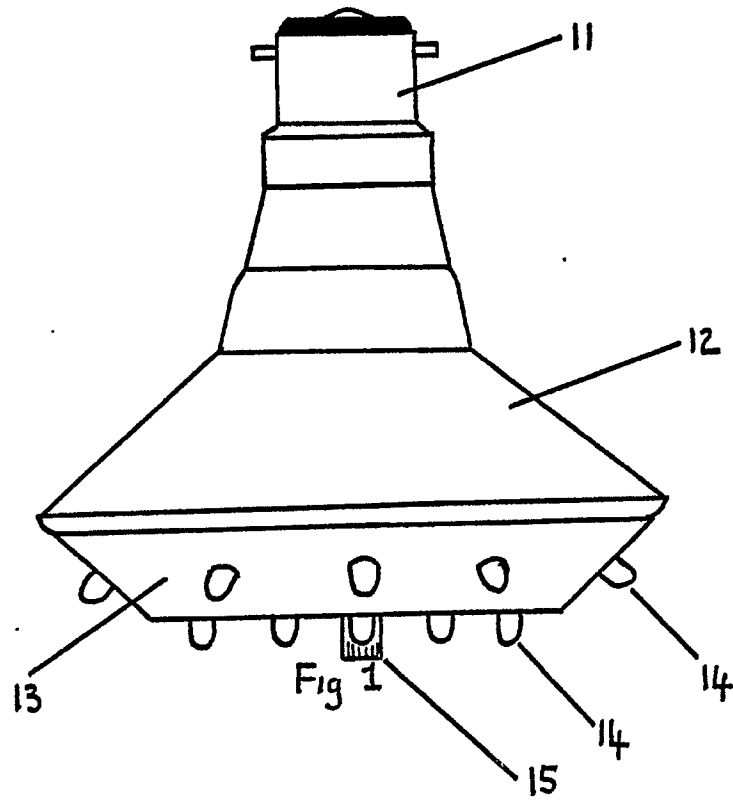
(57) The solid state display light having an array of LED's (14) produces a range of sequencing lighting effects and patterns with an adjustable switching time control (17 not shown) which can be adjusted to change lighting effects. This unit will replace any tungsten lamp either with BC cap or Continental screw cap and will operate on supply voltages from 90 volts to 300 volts AC at 50 Hz or 60 Hz.

The solid state display light is robust, lightweight, low powered and has long life.
This product will transform static lighting displays into active lighting displays.



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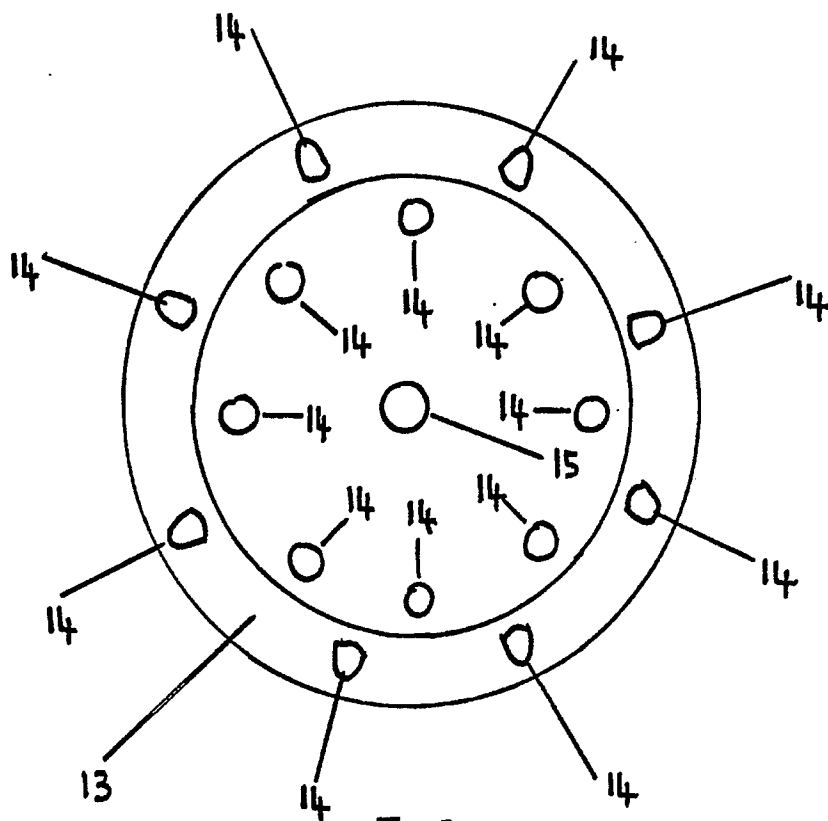


Fig 3

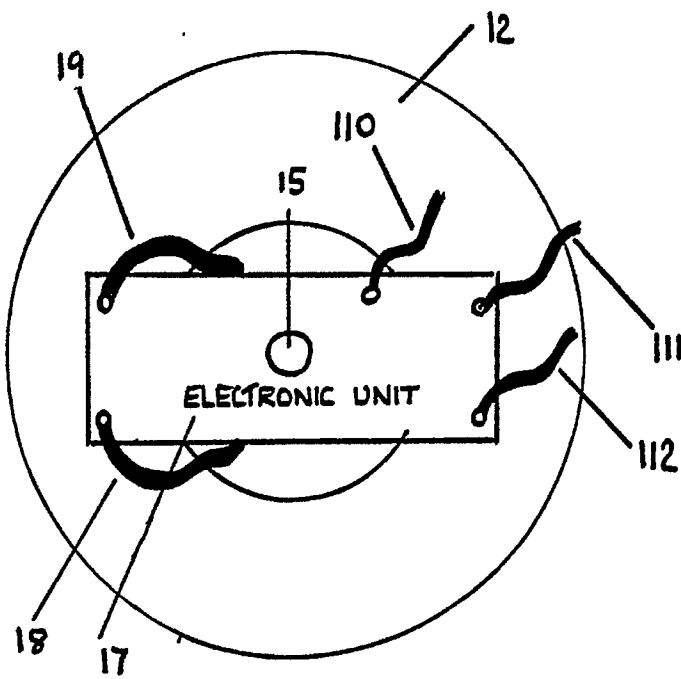


Fig 4

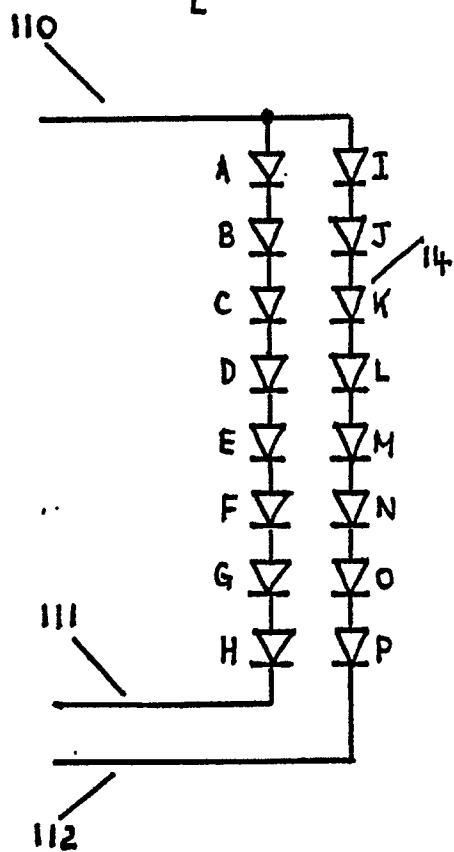
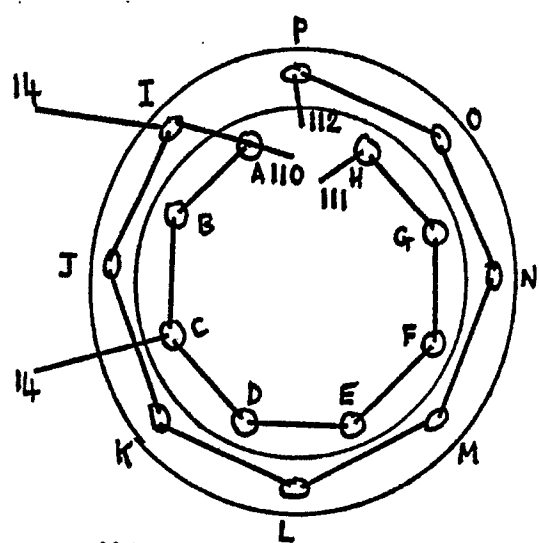


Fig 5

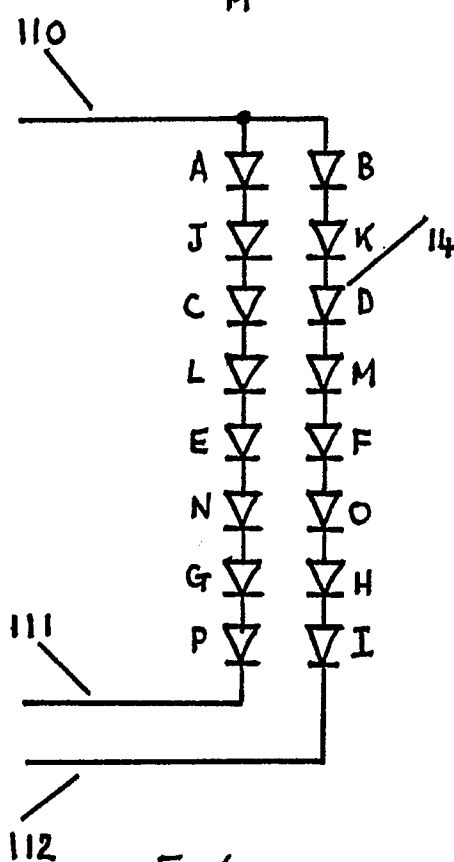
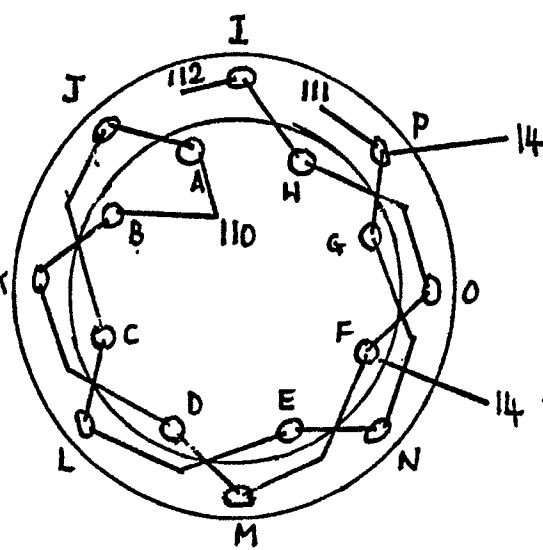


Fig 6

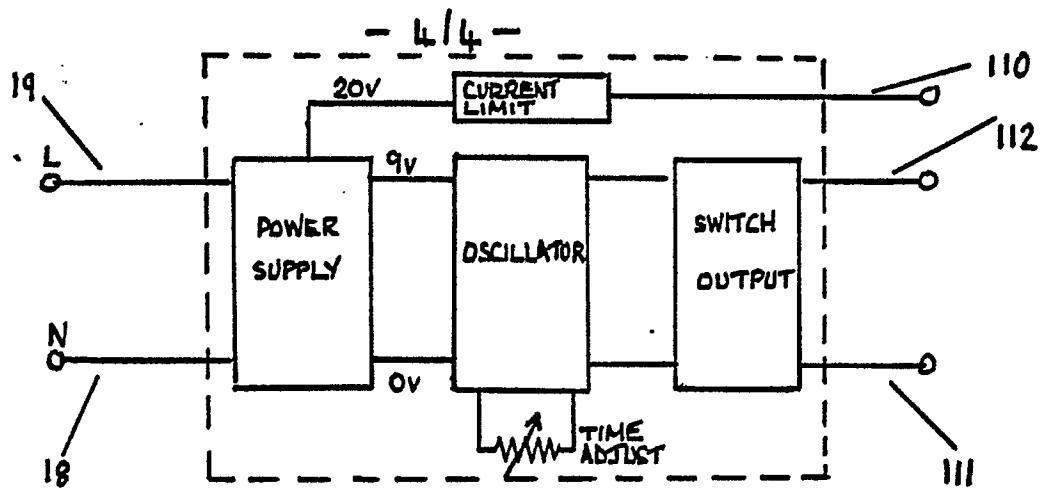


FIG 7

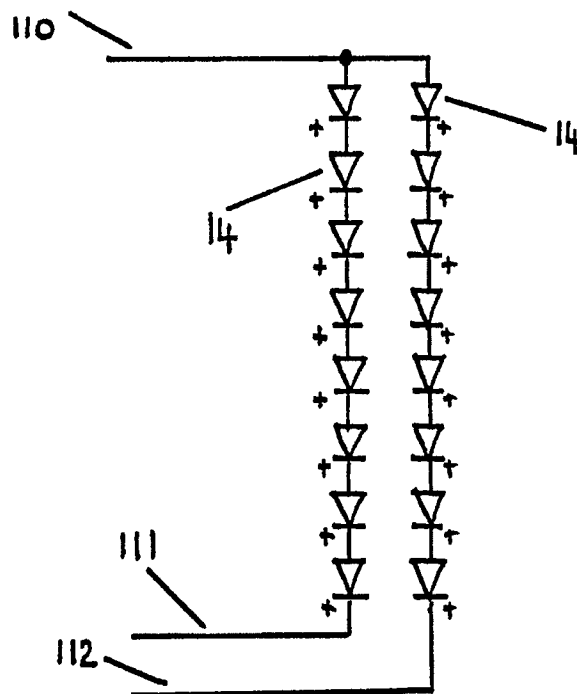


FIG 8

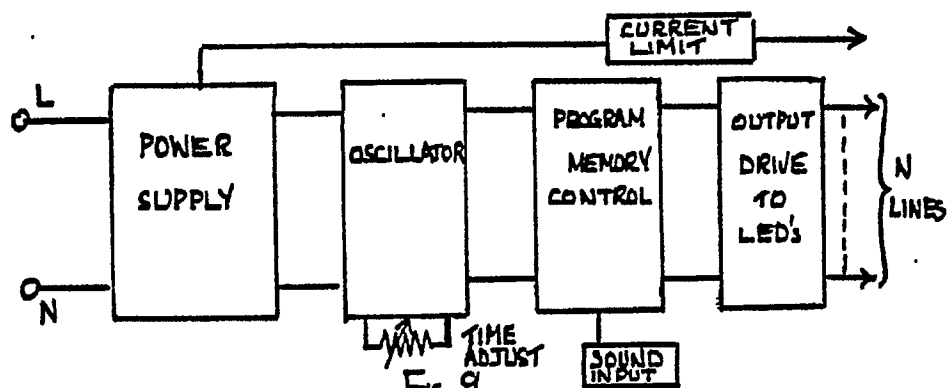


FIG 9

SOLID STATE DISPLAY LIGHT

This invention relates to a plug in solid state display light.

Lighting products are used in display for street lighting schemes, retail shop displays, external and internal lighting schemes for pubs, clubs and discos, Christmas street displays, and seafront lighting

Currently lighting schemes use standard tungsten lamps which are coloured or clear. Tungsten lamps are plugged into festoons or dedicated displays this is used to enhance buildings, gardens, streets and seafronts.

In normal use these lights are static i.e. on or off, when more active displays are required then festoons or dedicated displays are switched from electrical control units which may be expensive. In general these systems have a high level of maintenance in lamp replacement and high power running costs, also the glass lamps are fragile and subject to vandalism.

According to this invention standard tungsten lamp bulbs may be directly replaced by this plug in solid state display light, this product has an array of light emitting diodes(LED) in range of colours and shapes the unit has an adjustable control to vary a pattern of display. This invention now provides for a self contained display lighting product for each tungsten lamp bulb that it replaces.

The solid state display light will operate from any A.C. mains supply from 90volts to 300volts 50Hz or 60Hz or for use on low voltage systems(AC or DC).

A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawings in which:

Fig 1 Shows overall shape of solid state display light (actual size) for BC mounting.

Fig 2 Shows solid state display light with continental screw cap.

Fig 3 Shows top moulding with array of light emitting diodes(LED).

Fig 4 Shows position of electronic control unit inside the back moulding.

Fig 5 Shows the wired pattern of LEDs.

Fig 6 Shows alternative wiring pattern of LEDs.

Fig 7 Shows block diagram of electronic control.

Fig 8 Shows LED connections.

Fig 9 Shows optional electronic control with LED pattern programmed in electronic memory.

Referring to the drawing of the solid state display light shown in fig 1 the unit is made up of two mouldings formed in 2mm ABS material, a back moulding 12 and a front moulding 13. The front moulding 13 has mounted into it an array of light emitting diodes(LEDs) 14 as shown in fig 3.

The method of connection for the solid state display light to the A.C. supply is through the BC lamp cap 11 (plug in) as shown in fig 1 or continental screw cap 16 as shown in fig 2, both types of lamp cap are resin moulded onto the back moulding 12.

The rate of switching of the LEDs is controlled by adjusting the knob 15 which is mounted through the front moulding 13 as shown in fig 1.

The control of the LEDs is by the electronic control unit 17 as shown in fig 4. A block diagram of the electronic control unit is shown in fig 7, the electronics is connected to the power supply by wires 18 and 19 as shown in fig 4 and fig 7 these are connected to lamp cap 11 or 16. The power supply provides power to the oscillator and LED current drive as shown in fig 7, the LED array as shown in fig 8 shows that the light emitting diodes (LEDs) are wired in series in two groups of eight LEDs (these numbers may be varied by changing the value of the current limiting resistor as shown in fig 7), the LEDs are connected to

the electronic unit by a common connection 110 and to the switching lines 111 and 112 as shown in fig 8.

The LEDs are switched alternately and time of switching is adjusted by turning knob 15 shown in fig 1 and fig 4.

By adjusting the time of switching of the LEDs it is possible to make them appear to all be on or switch at varying rates up to 4 seconds or more.

Different switching patterns can be achieved by wiring the LEDs as shown in fig 5 and fig 6.

Light emitting diodes(LEDs) wired as shown in fig 5 will produce a switching pattern moving from the outside edge of the solid state light to the inside centre of the light, when the LEDs are wired as shown in fig 6 this will produce a rotational switching pattern.

Light emitting diodes come in a range of colours as follows RED, GREEN, YELLOW and ORANGE. The solid state display light may be made up from any combination of colour to obtain a large range of visual effects by pattern of LEDs, colour and time of switching.

The solid state display light is robust, lightweight, low powered and long life as solid state light sources are being used.

By using programmed memory electronics as shown in fig 9 then very complex lighting patterns can be produced. Also the rate of switching may be controlled by sound input.

CLAIMS

1 A solid state display light comprising a plastic back moulding, a plastic front moulding with an array of light emitting diodes mounted on the front moulding switched in a sequence of patterns controlled from an electronic unit mounted in the back moulding connected to the power supply through BC lamp cap or continental screw cap which allows replacement of tungsten lamp bulbs to generate active lighting displays.

2 A solid state display light as claimed in claim 1 wherein a means to control the switching speed of the light emitting diodes is provided by an adjustment knob mounted through the front moulding.

3 A solid state display light as claimed in claim 1 or claim 2 wherein the light emitting diodes may be wired in any configuration, position or number to produce different lighting patterns.

4 A solid state display light as claimed in claim 1 or claim 2 or claim 3 wherein the light emitting diodes may be any combination of colours to produce different lighting patterns.

5 A solid state display light as claimed in claim 1 wherein the front moulding can be moulded in a range of shapes and surface finishes.

6 A solid state display light as claimed in claim 1 or claim 5 wherein the front moulding can be moulded in colour, opaque, translucent or metalised surface material to produce scattered lighting effects.

7 A solid state display light as claimed in claim 1 wherein an internal light source to provide back lighting to the light emitting diode array.

8 A solid state display light as claimed in claim 1 or claim 2 with programmed memory control of the light emitting diodes sequence of switching producing random effects over long periods of time.

9 A solid state display light as claimed in claim 1 and claim 8 wherein the switching of LEDs is controlled from a sound activated input.

10 A solid state display light as claimed in claim 1 wherein operation is from AC or DC supply systems.

11 A solid state display light as described herein with reference to figures 1 to 9 of the accompanying drawings.